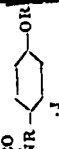


Effect of substituents on the properties...

S/076/61/035/002/002/015
B124/B202

Card 7/9

Группа X в. 	Важные показатели показателей			
	$\Delta\omega_i$	$\Delta\omega_{ii}$	I_e	$\lambda_i \left(\frac{\lambda_i}{1000} \right) \epsilon_i$
-H	0	0	700	2520 (9,6) 0,27
-SO ₂ R	3	8	800	2470 (11,5) 0,34
-CONH ₂	-1	-	-	-
-F	0	0	900	2520 (12,5) 0,23
-COOEt	0	-2	1000	2580 (10,5) 0,36
-CHO	2	2	1000	2540 (14) 0,41
-CH ₂ Cl	-1	-4	1100	2580 (17) 0,31
-CCl ₃	-	-	-	-
-OCOR	1	1	1200	2550 (14,5) 0,29
-Cl	-1	-3	1400	2640 (10,2) 0,29
	-4	-3	-	2600 (15) -
-R	2	-8	1450	2650 (10,2) 0,28
-CR ₃	-2	-8	1500	2650 (10,5) 0,29
-CH ₂ NR ₂	-2	-8	1550	2620 (10,5) 0,30
-Br	3	2	1600	2700 (12) 0,30
	-1	-9	2000	3000 (5) -
-CO	0	-2	2700	2880 (12,5) 0,32
-CH ₂ F	3	-5	2800	2660 (12,5) 0,40
-OH	-5	-10	3250	2850 (10,5) 0,26
-C: C	-2	-16	3500	2900 (16) 0,4
-OR	-5	-16	4000	2920 (12) 0,29
-OEt	-8	-18	4200	2950 (12,3) 0,30

Effect of substituents on the properties...

S/076/61/035/002/002/015
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УФ спектры поглощения				$\Delta\lambda$	$\Delta\mu$	σ_{max}
$\lambda_1: \left(\frac{\epsilon_1}{1000}\right)$	$\lambda_2: \left(\frac{\epsilon_2}{1000}\right)$	$\lambda_3: \left(\frac{\epsilon_3}{1000}\right)$	$\Delta\lambda$			
[2100 (10)]	1960 (20)	1745 (30)	0	0	0	0
—	—	—	~0	—	0.6	0.6
1870 (28)	—	—	~80	0.1	0.3	0.3
1925 (23)	—	—	~50	—	0.05	0.05
[2150 (10)]	2000 (16)	1820 (25)	~80	0.1	0.5	0.5
—	—	—	~80	—	0.4	0.4
2160 (11)	2000 (14)	1810 (24)	~50	—	0.2	0.2
—	—	—	120	—	0.4	0.4
2450 (18)	—	—	130	0.15	0.2	0.2
2130 (8.5)	2000 (13)	1770 (26)	—	—	—	—
—	—	—	130	0.1	-0.15	-0.15
2130 (8)	—	—	120	—	0.2	0.2
—	—	—	170	0.15	0.25	0.25
2410 (15.3)	—	—	—	—	—	—
[2200 (10)]	1940 (32)	1750 (24)	340	0.4	0.3	0.3
2190 (9)	—	—	160	0.2	—	—
2200 (9)	—	—	390	0.7	0.35	0.35
2200 (9)	—	—	400	0.35	—	—
—	—	—	460	0.45	—	—
—	—	—	480	—	0.25	0.25
—	—	—	—	—	—	—

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Effect of substituents on the properties....

S/076/61/035/002/002/015
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Legend to Table 1: 1) group X in, 2) stretching vibrations in the nitro group, 3) UV absorption spectra..., 4) σ_{para} , 5) ferrocene. The methyl group is designated with R in the formulas, the H-atoms at the carbon are omitted in most of the formulas; the hexagon or Ph denote the benzene ring. λ , ϵ and f (oscillator output) are given for solutions in heptane and $\Delta\lambda_1$ for solutions in benzene; λ_1 of the non-substituted nitrobenzene in benzene is 2620 Å approximately; + are the absorption bands with fine structure; the tables give the values λ and ϵ of the most intense component. The position of the inflection point of the absorption curve is given in brackets.

Card 9/9

VOL'KENSHTEYN, Yu.B.; LOZIN, B.V.; PETUKHOV, V.A.

Spectral study of the complex of 2-acetothienone with aluminum chloride. Izv. AN SSSR. Otd.khim.nauk no.5: 917-919 My '62.
(JIR: 15:6)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Ketone--Spectra) (Aluminum chloride)

*The Distribution of the Nuclear Electrons in Thin Metallic [Aluminium] Films. I. V. A. Petukhov and N. A. Vyshinsky (Zhur. Eksp. i Teoret. Fizik, 1940, 10, (11), 1177-1183).—(In Russian.) The distribution of electrons of energy 40-120 k.e.v. in aluminium films $6 \times 10^{-2} \times 10^{-2}$ cm. thick in the angular interval $110^\circ-122^\circ$, was investigated by the method of longitudinal focusing in a uniform magnetic field. The distribution of electron energy levels was obtained. It is shown that the nuclear distribution takes place elastically, without loss of energy, and that the magnitude of the effective section is in accordance with Mott's formula. N. A.

PETUKHOV, V. A.

SA

145 537.535.74
Nuclear scattering of electrons in thin metallic
films. V. A. PETUKHOV, V. A., AND VYSIUNSKY, I. A.
J. Phys., U.S.S.R., 4, 3, pp. 235-246, 1941.—The scat-
 tering of electrons of 40-120 eV energy in Al films
 $5 \cdot 10^{-6}$ - $2 \cdot 10^{-3}$ cm. thick in an angle interval of
 119.5° to 122° is investigated. A method of longi-
 tudinal focusing by a homogeneous magnetic field
 is employed, which permits the energy distribution
 of the scattered electrons to be obtained. It is
 shown that the nuclear scattering is elastic, i.e.
 without energy loss, and that the effective scattering
 cross-section is in accordance with Mott's theory.

A 53

1

137 AND 138 (2013)		139 AND 140 (2013)	
SA		AS3	
2140 The nuclear scattering of electrons in this metal is discussed. M. P. PETERSON, V. A. AND VYKHOVSKY, I. A. <i>J. Phys., U.S.S.R.</i> 3, 3, pp. 137-139, 1941. (See Abstr. 140) The scattering of electrons in gold foil 3-5 $\times 10^{-4}$ cm thick in an angle interval from 110° to 122° and within an energy range from 40 to 150 eV is investigated. Experimental results obtained pointed to the possible influence of the double scattering of electrons along the foil. The rough calculation gives the correct order of magnitude of the observed effect.		537.533.74	
ABSTRACTED FROM METALLURGICAL LITERATURE CLASSIFICATION			
EDMUNDSON			

CA

Scattering of electrons in thin foils V. A. Petukhov and I. A. Vyshinskiy Bull Acad Sci USSR Div Phys. S. 600 (1941) Electron scattering was studied in very thin Al foils at energies of 40-120 kv and at angles of 119.5-132°. The results definitely disprove the existence of an anomalous effect of inelastic nuclear scattering. The exper. curves possess a "tail" due to electrons of reduced energy, caused by secondary scattering in passing through the foil. A rough calcul. shows the amt. of this effect to agree with the calcul. in the order of magnitude. G. M. Kosolapoff

ASB S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

PETUKHOV, V. A.

"Nuclear Scattering of Electrons in Thin Metallic Films," Zhur. Eksper. i
Teoret Fiz., 12, Nos.1-2, 1942
Physico-Tech. Inst., AS Khar'kov

82788

S/058/60/000/004/002/016
A003/A001

21.2100

Translation from: Referativnyy zhurnal. Fizika, 1960, No. 4, p. 28, # 7807

AUTHORS: Kolomenskiy, A.A., Petukhov, V.A., Rabinovich, M.S.

TITLE: A New Accelerator of Charged Particles: The Ring-Shaped Phasotron 19

PERIODICAL: V sb.: Nekotoryye voprosy teorii tsiklicheskikh uskoriteley. AN SSSR, Moscow, 1955, pp. 7-12

TEXT: The operational principle of the ring-shaped phasotron, a cyclic accelerator with a constant magnetic field, was briefly explained. The ring magnet consists of equal sections, each of which contains 2 sectors with the angular openings ν_1 and ν_2 . The directions of the magnetic field in adjacent sectors are taken to be of opposite signs, so that the curvature centers of the orbit segments O_1 and O_2 lie on different sides of the ring. In relation to O_1 the field increases along the radius ($n_1 < 0$), in relation to O_2 it decreases ($n_2 > 0$). The alternation of the signs of n_1 and n_2 in the case of sufficiently large values of $|n_1|$, n_2 and the number of sections N (n of the order of hundred, N of the order of several tens) ensures strong focusing both in the radial and the axial (along the axis of the installation) directions. At the same time the

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S/058/60/000/004/002/016

A003/A001

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S/058/60/000/004/002/016

A003/A001

A New Accelerator of Charged Particles: The Ring-Shaped Phasotron

fast increase in the absolute magnitude of the magnetic field in the narrow ring (e.g., according to the law $H \sim \exp(n\varphi/r)$, where $\varphi = r - r_{in1}$) makes the acceleration from low initial energy values possible. The essential advantage of the ring phasotron is the absence of the critical energy at $v_2 > v_1$. The motion of the particles in the ring-shaped phasotron is briefly considered

Ya. M.

Translator's note This is the full translation of the original Russian abstract.

Card 2/2

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SECRET
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APPROVED FOR RELEASE: 06/15/2000

CIA-RDP86-00513R001240710007-9"

PARTICLE ACCELERATORS: PHASOTRON

"Circular Phasotron", by V.A. Kiselevich, V.A. Petukhov, and M.S. Maslovich, Physics Institute named P.N. Lebedev, Academy of Sciences USSR. Priroda i Tekhnika Eksperimenta, No. 2, September-October 1953, pp. 20-25.

Description of the operating principle of a new accelerator for charged particles (circular phasotron), first proposed by the authors in May 1953. Unlike the ordinary cyclotron with two dees, the magnet in this accelerator is circular, made up of sectors with opposite directions of field. This makes it possible to increase the energy of the particles accelerated when over a wide range of energies. It also has a higher practical upper limit for the energies attainable by the particles.

CONFIDENTIAL

VEKSLER, V.I.; YEFREMOV, D.V.; MINTS, A.I.; VEYSBAYN, M.M.; VODOP'YANOV,
P.A.; GASHEV, M.A.; ZEYDLITS, A.I.; IVANOV, P.P.; KOLOMENSKIY,
A.A.; KOMAR, Ye.G.; MALYSHIN, I.P.; MOZOSZON, M.A.; NEVLAZESKIY,
I.Kh.; PETUKHOV, Y.A.; RABINOVICH, M.S.; GUBCHINSKIY, S.M.; SI-
NEL'NIKOV, K.D.; STOLOV, A.M.

Ten Bev energy synchrocyclotron built by the Academy of Sciences
of the U.S.S.R. Atom.energ. no.4:22-30 '56. (MLRA 9:12)
(Cyclotron)

PETUKHOV V A

AUTHOR: See Table of Contents

TITLE: Particle Accelerators (Uskoriteli elementarnykh chastits)
Supplement Nr 4 to the Journal "Atomnaya energiya," 1957

PUB. DATA: Atomizdat, Moscow, 1957, 91 pp., 9200 copies

ORIG. AGENCY: None given

EDITOR: Chief Ed.: Fedorov, N. D.; Lit. Ed.: Artemov, A. I.; Tech. Ed.:
Popova, S. M.; Corrector: Sidorova, G. V.

PURPOSE: This collection of articles is meant for specialists and workers
in the field of cyclic and linear particle accelerators.

COVERAGE: This supplement to "Atomnaya energiya" presents papers hitherto
unpublished, or published in part only. Some of these articles
were read at scientific conferences. The subject matter of all
of them is the acceleration of elementary particles in various
accelerators.

Card 1/6

Particle Accelerators (cont.)

TABLE OF CONTENTS: From the Editor

Veksler, V. I.; Kolomenskiy, A. A.; Petukhov, V. A.;
Rabinovich, M.S. Physical Principles of Operation of the
10-Bev Proton-synchrotron (Fizicheskiye osnovy sooruzheniya
sinkhrofazotrona na 10 Bev)

5

This proton synchrotron was assigned to the United Institute
of Nuclear Research (Ob'yedinennyy institut yadernykh
issledovaniy), and was put into operation in April, 1957.
Other data used in this article were obtained from the 180-Mev
proton-synchrotron operated by the Institute of Physics of
the AS USSR.

Zhuravlev, A. A.; Komar, Ye. G.; Mozalevskiy, I. A.;
Monoszon, N. A.; Stolov, A. M.

Magnetic Properties of the 10-Bev Proton-Synchrotron at the
United Institute of Nuclear Research (Magnitnyye kharakteristiki
sinkhrofazotrona na 10 Bev Ob'yedinnennogo instituta yadernykh
issledovaniy.)

15

Card 2/6

Particle Accelerators (cont.)

The characteristics of the magnetic field and details of magnet design are given. Magnetic data of the ring magnet are also given.

There are 12 figures.

Moroz, Ye. M.; Rabinovich, M. S.

Sectional Cyclotron (Sektorny tsiklotron)

27

A cyclotron equipped with a ring-shaped d.c. magnet which is composed of a series of wedgelike sections is described. It permits better vertical and radial stability leading to an increase in the intensity of the particle beam, and permits higher particle energies up to the synchrocyclotron range. There are 6 references, 3 of which are USSR.

Kolomenskiy, A. A.; Lebedev, A. N.

Certain Characteristics of High-energy Electron Cyclic Accelerators
(Nekotoryye osobennosti elektronnykh tsiklicheskikh uskoriteley na bol'shiye energii)

31

Card 3/6

Particle Accelerators (cont.)

High-energy electron synchrotrons, which are characterized by the presence of intensive relativistic electromagnetic radiation of electrons in the magnetic field of the accelerator, are described. There are 2 figures, 1 table, and 15 references, 14 of which are USSR.

Ado, Yu. M.; Cherenkov, P. A.

Incoherent Electron Radiation in a Synchrotron and Certain of Its Applications in the Study of Accelerator Operation (Nekogerentnoye izlucheniye elektronov v sinkhrotrone i nekotoryye primeneniya ego dlya issledovaniya raboty uskoriteleya)

49

The relatively strong radiation of electromagnetic oscillations in a high-energy electron synchrotron (up to 100 Mev and more) is discussed. There are 5 figures and 14 references, 7 of which are USSR.

Belyak, A. Ya.; Veksler, V. I.; Kamunnikov, V. N.; Cherenkov, P. A.; Yablokov, B. N.

Characteristics of the 280-Mev Synchrotron in Operation at the Institute of Physics of the AS USSR (Osobennosti sinkhrotrona na 280 Mev ФИАН SSSR)

57

Card 4/6

Particle Accelerators (cont.)

The synchrotron at the Institute of Physics was put into operation in 1949. This article gives design and operational data, and describes improvements which increased the quality of the synchrotron's performance. Pisarev, V. Ye., and Shorin, K. N. worked on the improvement of the magnetic characteristics of the accelerator. Kotel'nikov, N. G. contributed to the development of the acceleration chambers. Yakushkin, V. Ye. and Minayev, V. F. worked on the development of the injection gun. Usova, I. N. performed the intensity measurements. V. A. Skorik contributed to the development of oscillators. V. S. Shirchenko was occupied with the stabilization of the upper limit of the γ -radiation spectrum. V. I. Travinskiy developed a method for coating the cavity resonators with a conducting layer. There are 4 tables, 12 figures, and 6 references, 1 of which is USSR.

Lobanov, Yu. N., Petukhov^X, V. A.

Experimental Principle of the Theory of Particle Capture in Betatron Acceleration (Eksperimental'nyye osnovy teorii zakhvata chastits v betatronnyy rezhim uskoreniya)

73

Described is research on electron capture in a betatron performed at the Second Scientific Research Institute of Physics of the Moscow State

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Card 6/6

PETUKHOV, V.A., LOBANOV, Yu.N., LOGUNOV, V.N., OVCHINNIKOV, E. P., RABINOVICH, M.S.
RUSONOV, V.D.

"Experimental investigations of Physical Processes Facilitating
the Capture of Electrons Injected into the Betatron," paper presented at
CERN Symposium, 1956, appearing in Nuclear Instruments, No. 1, pp. 21-30,
1957

VEKSLER, V.I.; KOLOMENSKIY, A.A.; PETUKHOV, V.A.; RABINOVICH, M.S.

Physical principles involved in the construction of the 10 Bev
proton synchrotron. Atom.energ.supplement no.4:5-14 '57. (MIRA 10:10)
(Synchrotron)

LOBANOV, Yu.P.; PETUKHOV, V.A.

Experimental basis of the theory of particle capture in betatron
accelerators. Atom.energ.supplement no.4:73-82 '57. (MIRA 10:10)
(Particle accelerators)

Petukhov, V. A.

AUTHOR: Petukhov, V.A.

120-5-5/35

TITLE: A Fast Method of Scanning of nuclear Photo-emulsions
(Skorostnoy metod prosmotra yadernykh fotoemul'siy)

PERIODICAL: Priory i Tekhnika Eksperimenta, 1957, no.5,
pp. 26 - 30 (USSR)

ABSTRACT: A "flying spot" method of scanning photo-emulsions is described. The instrument is shown schematically in Fig.1. A micro-oscillograph of suitable dimensions and low persistence is placed above a photo-emulsion to be scanned and a normal television scanning regime is established. An image of the "flying spot" is produced within the emulsion by means of lens system. This image is recorded by a photomultiplier placed under the emulsion. When the "flying spot" strikes a silver grain, a partial scattering of light takes place and a signal appears across the load of the photomultiplier (Fig.2). This signal is amplified and converted into a standard form and is then supplied to a second, large screen oscillograph having a long persistence. The two oscillograph screens are scanned in phase and therefore all the grains lying at a depth σ within the photo-emulsion appear as points of light on the large screen of the second tube. An increase of the depth of view is obtained because the magnification of the optical

Card1/2

A Fast Method of Scanning of Nuclear Photo-emulsions. 120-5-5/35

system is low. It was found to be possible to show on a television screen on a magnified scale all the tracks lying within 1 mm² of the surface of a photo-emulsion 400 μ thick, independently of their orientation or depth. At the same time only random clusters of grains of the background are projected and this lowers general background by a factor of 1 000. The speed of scanning can be brought up to about 10 cm² of the surface per hour. There are 3 figures, and 1 Slavic reference.

ASSOCIATION: United Institute for Nuclear Studies.
(Ob'yedinennyy institut yadernykh issledovaniy)

SUBMITTED: April 4, 1957.

AVAILABLE: Library of Congress.
Card 2/2

PA - 2695

AUTHOR: PETUKHOV, V.A.
TITLE: On an Experimental Possibility for the Investigation of Electron Structure. (Ob eksperimental'noy vozmozhnosti issledovaniya struktury elektrona, Russian)
PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 2, pp 379 - 380 (U.S.S.R.)
 Received: 5 / 1957

Reviewed: 6 / 1957

ABSTRACT: When investigating the structure of heavy nuclei by means of electrons charge distribution within the electron must be considered. Besides, charge distribution in the electron is in itself of interest. For the experimental investigation of this problem the principle of the ring phasetron is applied. (A.A.Kolomenskiy et al., report of the Physical Institute of the Academy of Science of the U.S.S.R., 1953). The use of antiparallel electron bundles offers very great energetic advantages. Thus, two antiparallel bundles of 150 MeV electrons correspond to an accelerator of 100 BeV. The following is a further possibility for the realization of cross bundles: The author computed the direct and the inverse variety of the ring-phasetron. In the case of the first variety the orbit of the particles is an opening spiral of very small thread, but with the inverse variety the radius of the orbit decreases slowly with increasing acceleration. By means of suitable construction (indicated here), a direct and an inverse ring phasetron can be included in a magnetic

Card 1/2

Physical Institute "P.N.Lebedev" of the Academy of Science of the U.S.S.R.)

PRESENTED BY:

SUBMITTED: 31.10.1956.

AVAILABLE FOR RELEASE: 06/15/2000

CIA-RDP86-00513R001240710007-9"

Card 2/2

SOV-46-4-3-13/18

AUTHOR: Petukhov, V. A.

TITLE: Measurement of Electrostriction in Some Liquids (Izmereniye
effekta elektrostriksii v nekotorykh zhidkostyakh)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, No 3, pp 288-288
(USSR)

ABSTRACT: Quantitative study of electrostriction in liquids is of both theoretical and practical interest (Refs.1, 2 and 3). Up to the present time, electrostriction studies have only been qualitative (Refs.4 and 5). Attempts to measure electrostriction effects have not been successful because of experimental difficulties such as volume changes due to thermal expansion and deformation of the condenser in an electric field. The author has attempted to avoid these difficulties by using the interference modulation method (Refs. 6, 7, 8 and 9). The principal parts of the apparatus used are shown in Fig.1. In this figure, 1 is a massive container covered with a glass plate, 2, 3 are the plates of a high voltage condenser with metallic terminals, 4, 5 is a thin brass membrane 30-40 μ thick, 6 is a mirror which forms a part of the interferometer, and 7 are capillaries. A block diagram of the apparatus is shown in Fig.2. Here, 1 is the heavy container with the condenser, 2 is a

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SOV-46-4-3-13/18

Measurement of Electrostriction in Some Liquids

transformer providing the high potential for the condenser at a frequency of 50 c/s, and 3 is the interferometer. 4 is the source of light. When, as a result of electrostriction, the membrane carrying the mirror oscillates with double the frequency of the electric field, a periodic change in the path difference of the rays passing through the interferometer occurs. As has been shown before (Refs. 6 to 9), under these conditions, the visibility of the interference pattern is a known function of the amplitude of vibration of the membrane, so that both the amplitude and the pressure may be found. The method of calibration of this instrument was described in Ref. 10. Volume changes in the container are due not only to electrostriction but also to heating effects. To avoid these effects a special attachment was used consisting of two glass capillaries whose resistance at the electrostriction frequency is very high while the static resistance is low. In this way the excess

Card 2/3

SOV-46-4-5-13/1

Measurement of Electrostriction in Some Liquids

Liquid produced by changes in temperature is easily removed from the container. A table is given of results of measurements using this apparatus. Electrostriction pressure was measured for carbon tetrachloride, benzene and toluene. Work was carried out under the direction of I. L. Fabelin. There are 3 figures, 1 table and 11 references, of which 7 are Soviet.

ASSOCIATION: Electric Institute of the U.S.S.R. Academy of Sciences, (Physics Institute imeni P.N. Lebedev, AS USSR, Moscow)

SUBMITTED: September 27, 1957.

1. Liquids--Electrical properties
2. Electric fields--Measurement
3. Electrostatic capacitance--Measurement

Card 3/3

82739

S/089/60/009/002/013/015
B006/B056

21.2100

AUTHOR: Petukhov, V. A.

TITLE: A Synchrotron Having an Energy of 680 Mev

79
PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 2, pp. 154-155

TEXT: In the present article, the 680-Mev accelerator completed by the Laboratoriya uskoriteley Fizicheskogo instituta im. P. N. Lebedeva AN SSSR (Accelerator Laboratory of the Institute of Physics imeni P. N. Lebedev of the AS USSR) in 1960 is described. The accelerator was constructed according to the model of the 10-Bev proton-synchrotron. For the major part, it also operates as a synchrotron (with constant revolution frequency of the particles); only in the first part, frequency changes by about 9% like in a proton-synchrotron. The intensity attained in the accelerator amounts to $(5-6) \cdot 10^8$ electrons/pulse at the end of the cycle. A van de Graaff of 800 kv serves as an injector. Up to 10^{10} electrons can be accelerated by this device. The electromagnet consists of four circular sectors (86°) with rectilinear spacings 67 cm long; the mean radius of the circular sectors is 200 cm, the width of the pole piece is 36 cm, the

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A Synchrotron Having an Energy of 680 Mev

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maximum induction in the gap attains 11,600 oe, the magnetic field has 20 oe at the moment of injection. Acceleration time is 0.6 sec, the revolution frequency of the operating cycles is 5 sec per cycle. The magnetic field increases constantly in the major part of the cycle (20,000 oe/sec), and toward the end of the cycle it decreases by 20%. The average increase of electron energy per cycle is 60 v. A number of further data are given, and the difficulties in connection with the correction of the magnetic characteristics are discussed. For the purpose of eliminating the distortions of the magnetic field and stabilizing the characteristics, the following devices were additionally introduced into the feeding system: 1) A demagnetizing device with an amplitude current of 180 a, which reduces the strength of the residual field from 50 to 2 oe. 2) A device for field magnetization, which produces a negative field of 35 oe before the beginning of the operating cycle. 3) A stabilizer with an accuracy of $\sim 0.5\%$ for stabilizing the voltage at the windings of the electromagnet. 4) Compensation windings for regulating the main characteristics of the magnetic field in the case of low field strengths. At a maximum energy, the radiative losses attain ~ 10 kev per cycle, and therefore the high-frequency system

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A Synchrotron Having an Energy of 680 Mev

S/089/60/009/002/013/015
B006/B056

(19 and 20.6 Mc/sec) operates in two parts. The first part (with frequency modulation) warrants the electron acceleration from injection energy to 100 Mev and the total voltage on the accelerated electrode of 250 v. The second part accelerates the electrons to maximum energy at 20.6 Mc/sec and a voltage on the toroidal resonator of 20 kev. ✓

Card 3/3

S/089/60/009/006/007/011
B102/B212

21.2000 also 1538

AUTHORS: Petukhov, V. A., Gabanets, I., Zhuravlev, A. A., Karmasin, M.,
Kotov, V. I., Myae, E. A., Obukhov, Yu. L., Sokhor, V.,
Tsirak, Yu., Benda, F., Dobiash, I., Marek, M., Fukatko, T.,
Svetov, L. V.

TITLE: The model of the ring proton synchrotron

PERIODICAL: Atomnaya energiya, v. 9, no. 6, 1960, 491-493

TEXT: The ring proton synchrotron which is a powerful focusing
accelerator with a magnetic field constant with respect to time, has been
suggested in 1953 by A. A. Kolomenskiy, V. A. Petukhov, and M.S. Rabinovich
and, independently of them, in 1955 by Symon (Phys.Rev. 98, 1152 (1955)).
The new device seems to be able to produce very intensive accelerated-
particle beams. A model of this ring synchrotron (with radial sectors)
has been constructed in the Ob"yedinennyy institut yadernykh issledovaniy
(Joint Institute of Nuclear Research). The electromagnet consists of
eight elements arranged periodically, each of which has a direct and an
inverse sector; it also has two straight sections. The azimuthal

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S/089/60/009/006/C07/011
B102/B212

The model of the ring...

dimension of the direct sector, which focuses the beam in radial direction, is $22^{\circ}30'$, and that of the inverse sector, which brings about the vertical focusing, is $7^{\circ}30'$. The inverse sectors cause the orbital perimeter of the ring synchrotron to be bigger than that of a standard strongly focusing accelerator. The ratio of the maximum radius of the orbit to the minimum radius of curvature is approximately equal to 3. The coils generating the field are arranged such that the magnetic field increases with the radius of the orbit according to $H = H_0 (R/R_0)^4$, i.e.,

it increases from 42 oe at $R = 35$ cm to 340 oe at $R = 59$ cm. The magnet exhibits the characteristic that the gap between its poles increases in proportion to the gap radius. Therefore, the vertical dimensions of the working area will also change from 2 to 4 cm. The increase of all geometrical dimensions of the sectors and the constancy of the field index k (the field index of the model is equal to 4) bring about a dynamic similarity of the orbits, and the frequency of the free oscillations will also be constant. The number of betatron oscillations per circulation may be varied from 1 to 3 in the vertical direction, and from 2.5 to 3.5 in the radial direction. The model is especially suited for

Card 2/3

The model of the ring...

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B102/B212

electron acceleration; the injection (of 20-40 kev electrons) may be done continuously or in a pulsed manner. The acceleration is done with an electric rotational field having a voltage of 10 to 20 v per circulation and a frequency of 450-500 cps. The first test results obtained from this unit showed that it is very sensitive with regard to the accuracy of collection and the stability of the principal magnetic characteristics. There are 2 figures and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The two references to English-language publications read as follows: K. Symon. Phys.Rev. 98, 1152 (1955); T. Ohkawa. Rev.Scient.Instrum., 29, 108 (1958). X

SUBMITTED: May 28, 1960

Card 3/3

ZHURAVLEV, A.A.; IVANOV, I.N.; KARMAVIN, M.; KOTOV, V.I.; MYAE, E.A;
OBOZNYI, V.A.; OBUKHOV, Yu.L.; PETUKHOV, V.A.

{Motion of particles in an annular synchro-cyclotron] Issledovanie
dvizheniia chastits v kol'tsevom fazotrone. Dubna, Ob"edinennyi in-t
iadernykh issl., 1961. 24 p. (MIRA 14:12)
(Synchrotron)

26850

Z/038/61/000/004/005/005

D238/D305

213100

also 2406, 2606

AUTHORS:

Petukhov, V.A., Habanec, J., Zhuravlev, A.A., Karmasin, M.,
Kotov, V.J., Myae, E.A., Obukhov, J.L., Sochor, V., Carák,
J., Benda, F., Dobias, J., Marek, M., Fukátko, T., Svetov, L.
V

TITLE:

A model of an annular cyclotron

PERIODICAL:

Jaderná energie, no. 4, 1961, 136 - 137

TEXT:

This is a translation of an Russian article entitled "Model' kol'tseвого fazotrona" (Model of an Annular Cyclotron) originally published in the Soviet periodical "Atomnaya energiya", 9, (1960), no. 12, pp 491-493. It deals with the model of an annular cyclotron which is a fixed field, alternating-gradient accelerator, built by Soviet and Czechoslovak physicists at the United Institute of Nuclear Research in Dubna. The proposal for an annular cyclotron was made for the first time in 1953 by A.A. Kolomenskiy, V.A. Petukhov and M.S. Rabinovich (Ref 1: Nekotoryye voprosy teorii tsiklicheskikh uskoriteley (Some Problems of the Theory of Cyclic Accelerators), AN SSSR, 1955; Priory i tehnika experimenta (1956), no. 2, p. 26). The elec

Card 1/2

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D238/D305

A model of an annular cyclotron

tromagnet of the accelerator consists of eight similar, alternately reserved parts, each of which has two sectors with opposite orientation of the magnetic field, and two straight sections. The accelerator is used for electron acceleration. Electrons with energies of 20-40 keV can be injected either continuously or in pulses. Using a combination of eddy and radio-frequency fields, a beam energy up to 2 MeV can be obtained with this model. Preliminary results obtained during test runs have shown the high accuracy of the machine and the great stability of its principal magnetic characteristics. Also, in agreement with the theory, a number of various resonances was observed which have a substantial influence on the intensity of the accelerated beam. There are 2 figures and 7 references: 4 Soviet bloc and 3 non-Soviet bloc. The references to the English language publications read as follows: K. Symon, Phys. Rev. 98 (1952), 1152; T. Okhawa, Rev. Scient. Instrum. 29, (1958), 108.

Card 2/2

21000
S/057/61/031/010/013/015
B111/B112

24.6720
AUTHORS:

Bonda, F., Gabaret, I., Bobash, I., Zaitsev, A. A.,
Karmasin, M., Kotov, V. I., Larek, M., Myse, E. A., Oshakov,
Yu. L., Petukhov, V. A., Svetov, L. V., Sokhor, V., Fukatko,
T., and Tairak, Yu.

TITLE: Annular proton synchrotron with radial sectors

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 10, 1961, 1255-1261

TEXT: This article describes the model of an annular proton synchrotron with radial sectors, built and put into operation at the Ob'yedinenyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research).

Technical data:

Number of periodicity elements
Azimuthal dimensions of a direct sector
Azimuthal dimensions of an inverse sector
Azimuthal dimensions of the gap
amplification factor
Initial radius

8
22030°
7030°
7030°
~ 3
35 cm

Card 125;

Annular proton synchrotron with ...

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Final radius	54 cm
Vertical dimension of the chamber for the initial radius	1 cm
Coefficient k for which $H = H_0 (r/r_0)^k f(\theta)$	4
Field strength in the initial radius	2.2 kG
Field strength in the final radius	0.5 kG
Injection energy	20 - 40 keV
Critical energy (total)	1 MeV
Final energy (total)	10 MeV

The frequencies of free particle oscillations were found to be $\nu_x \approx 1.7$ and $\nu_z \approx 1.8$, which are lower than the theoretical value. The machine

can also be used for studying the behavior of the particle beam and its accumulation. A cross-sectional view of the electromagnet is shown in Fig. 1. A pressure of $1 - 2 \cdot 10^{-6}$ mm Hg prevailed in the vacuum chamber. The injection system is designed both for pulsed and continuous operation. Acceleration is effected by an electric rotating field of 500 cps and 10 - 25 v per revolution. A special "speed up" system (rotating field of 600 v per revolution) serves for improving the electron-capture efficiency.

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Annular proton synchrotron with

The pulse, which is excessively increased by the "speed-up" process, is reduced by a thyatron circuit. A constant value of k could be attained with a theoretically calculated arrangement of the field coils along the ideal orbit. In addition to the principal coils, a coil was placed at the yoke of each sector, by which the influence of the iron resistance was eliminated. k and the azimuthal field distribution were measured with induction coils and a ballistic galvanometer. With a few exceptions, the values of k agreed with theoretical values to within $\pm 1\%$. The azimuthal inhomogeneity of the field was never greater than $\pm 1\%$. The position of the magnetic surfaces was determined with permalloy feelers with an error of 0.2 mm. The deviation from the theoretical values was never greater than 0.5 mm. The indication of the beam during the first revolutions (without acceleration) was carried out with screens and coordinate nets in the chamber, and later (with acceleration) with photomultipliers equipped with radially adjustable sets of targets. The measurements showed that the field is strongly affected by the induction and "speed-up" core (e.g., azimuthal inhomogeneity). It was found that under optimum conditions, the upward deviation of the beam from the center of the chamber did not exceed ± 4 mm, and that the deviation of the equilibrium

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Annular proton synchrotron with .

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orbits at one and the same point of the magnetic field was 5 mm per revolution. It is noted that this model can be used to study resonances with free oscillations, electron capture into a betatron system, and accumulation of accelerated particles. Yu. A. Chernyshov, A. Grachev and R. N. Fedorov are thanked for assistance. There are 6 figures, 1 table, 9 references: 4 Soviet and 5 non-Soviet. The three listed references to English-language publications read as follows: Ref. 1: T. Ohkawa, Rev. Sci. Instr., 29, 1958, 1558. Ref. 6: P. T. Cole et al., Rev. Sci. Instr., 28, 403, 1957. Ref. 9: K. M. Terwilliger et al., Rev. Sci. Instr., 28, 967, 1957.

SUBMITTED: December 6, 1960

Fig. 1: Cross-sectional view of electromagnet and vacuum chamber
Legend: (1) magnet; (2) chamber; (3) principal coils of magnet; (4) yoke coils.

Card 4/54

KOTOV, V.I.; PETUKHOV, V.A.

Physics of accelerators. Priroda 50 no.6:7-13 Je '61.
(MIRA 14:5)

(Particle accelerators)

BURSHTYIN, E.L.; VASIL'YEV, A.A.; MINTS, A.L., akademik; PETUKHOV, V.A.;
RUBCHINSKIY, S.M.

High-energy cyclic accelerators with a self-tuning magnetic
field. Dokl. AN SSSR 141 no.3:590-592 N '61. (MIRA 14:11)
(Particle accelerators)
(Magnetic fields)

RETURN K. 11

33231

S/089/62/012 002 002/014

B102/B138

24.6730

AUTHORS: Burshteyn, E. L., Vasil'yev, A. A., Nints, A. M., Petukh, V. V. A., Rubchinskiy, S. M.

TITLE: Application of the principle of magnetic field self-correction in superhigh-energy cyclic accelerators

PERIODICAL: Atomnaya energiya, v. 12, no. 2, 1962, 111 - 114

TEXT: The authors discuss the possibility of automatically controlling local magnetic field characteristics by using accelerated particle beam data. By this means the chamber cross section could be reduced, the beam energy increased and the accelerator structure simplified. As betatron and synchrotron oscillations are closely related to the chamber parameters, the self-correction of these oscillations is very important. Two main problems arise with betatron oscillations. Control of the equilibrium orbit, and stabilization of the number of oscillations are considered in the following. (A). A "smoothened" motion under the action of a constant focusing field is described in linear approximation by the equation $x'' + Q^2 x = F_t(\theta)$ without automatic control; x denotes the Card $\frac{1}{4}$

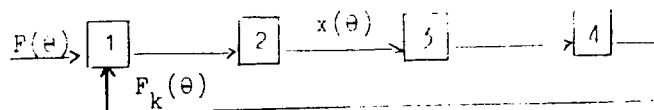
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Application of the principle...

deviation from the chamber axis, Q the number of betatron oscillations per revolution, $F_t(\theta)$ is the perturbation, a periodic function of θ (period 2π) which is slightly time-dependent. A correction function $F_k(\theta) = -L_f(x'' + Q^2x)$ is introduced, so that with automatic control the equation reads $x'' + Q^2x = F_t(\theta) - L_f(x'' + Q^2x)$ or $(1 + L_f)(x'' + Q^2x) = F_t(\theta)$. A possible block diagram (Fig. 1) is proposed: The initial perturbation $F_t(\theta)$ and the correction signal $F_k(\theta)$ act on the controlled object (1), measuring unit (2) measures the $x(\theta)$ deviations, computing unit (3) determines $x'' + Q^2x$ and (4) is the amplifying transducer with the characteristic operator L_f and a time delay T_d of ~ 1 msec: $L_f = 2/(1 + pT_d)$.



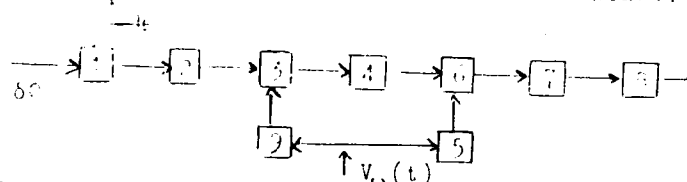
Carl 2/4

33231

Application of the principle...

5089, 5092, 5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108, 5109, 5110, 5111, 5112, 5113, 5114, 5115, 5116, 5117, 5118, 5119, 5120, 5121, 5122, 5123, 5124, 5125, 5126, 5127, 5128, 5129, 5130, 5131, 5132, 5133, 5134, 5135, 5136, 5137, 5138, 5139, 5140, 5141, 5142, 5143, 5144, 5145, 5146, 5147, 5148, 5149, 5150, 5151, 5152, 5153, 5154, 5155, 5156, 5157, 5158, 5159, 5160, 5161, 5162, 5163, 5164, 5165, 5166, 5167, 5168, 5169, 5170, 5171, 5172, 5173, 5174, 5175, 5176, 5177, 5178, 5179, 5180, 5181, 5182, 5183, 5184, 5185, 5186, 5187, 5188, 5189, 5190, 5191, 5192, 5193, 5194, 5195, 5196, 5197, 5198, 5199, 5200, 5201, 5202, 5203, 5204, 5205, 5206, 5207, 5208, 5209, 5210, 5211, 5212, 5213, 5214, 5215, 5216, 5217, 5218, 5219, 5220, 5221, 5222, 5223, 5224, 5225, 5226, 5227, 5228, 5229, 5230, 5231, 5232, 5233, 5234, 5235, 5236, 5237, 5238, 5239, 5240, 5241, 5242, 5243, 5244, 5245, 5246, 5247, 5248, 5249, 5250, 5251, 5252, 5253, 5254, 5255, 5256, 5257, 5258, 5259, 5260, 5261, 5262, 5263, 5264, 5265, 5266, 5267, 5268, 5269, 5270, 5271, 5272, 5273, 5274, 5275, 5276, 5277, 5278, 5279, 5280, 5281, 5282, 5283, 5284, 5285, 5286, 5287, 5288, 5289, 5290, 5291, 5292, 5293, 5294, 5295, 5296, 5297, 5298, 5299, 5300, 5301, 5302, 5303, 5304, 5305, 5306, 5307, 5308, 5309, 5310, 5311, 5312, 5313, 5314, 5315, 5316, 5317, 5318, 5319, 5320, 5321, 5322, 5323, 5324, 5325, 5326, 5327, 5328, 5329, 5330, 5331, 5332, 5333, 5334, 5335, 5336, 5337, 5338, 5339, 5340, 5341, 5342, 5343, 5344, 5345, 5346, 5347, 5348, 5349, 5350, 5351, 5352, 5353, 5354, 5355, 5356, 5357, 5358, 5359, 5360, 5361, 5362, 5363, 5364, 5365, 5366, 5367, 5368, 5369, 5370, 5371, 5372, 5373, 5374, 5375, 5376, 5377, 5378, 5379, 5380, 5381, 5382, 5383, 5384, 5385, 5386, 5387, 5388, 5389, 5390, 5391, 5392, 5393, 5394, 5395, 5396, 5397, 5398, 5399, 5400, 5401, 5402, 5403, 5404, 5405, 5406, 5407, 5408, 5409, 5410, 5411, 5412, 5413, 5414, 5415, 5416, 5417, 5418, 5419, 5420, 5421, 5422, 5423, 5424, 5425, 5426, 5427, 5428, 5429, 5430, 5431, 5432, 5433, 5434, 5435, 5436, 5437, 5438, 5439, 5440, 5441, 5442, 5443, 5444, 5445, 5446, 5447, 5448, 5449, 5450, 5451, 5452, 5453, 5454, 5455, 5456, 5457, 5458, 5459, 5460, 5461, 5462, 5463, 5464, 5465, 5466, 5467, 5468, 5469, 5470, 5471, 5472, 5473, 5474, 5475, 5476, 5477, 5478, 5479, 5480, 5481, 5482, 5483, 5484, 5485, 5486, 5487, 5488, 5489, 5490, 5491, 5492, 5493, 5494, 5495, 5496, 5497, 5498, 5499, 5500, 5501, 5502, 5503, 5504, 5505, 5506, 5507, 5508, 5509, 5510, 5511, 5512, 5513, 5514, 5515, 5516, 5517, 5518, 5519, 5520, 5521, 5522, 5523, 5524, 5525, 5526, 5527, 5528, 5529, 5530, 5531, 5532, 5533, 5534, 5535, 5536, 5537, 5538, 5539, 5540, 5541, 5542, 5543, 5544, 5545, 5546, 5547, 5548, 5549, 5550, 5551, 5552, 5553, 5554, 5555, 5556, 5557, 5558, 5559, 5560, 5561, 5562, 5563, 5564, 5565, 5566, 5567, 5568, 5569, 5570, 5571, 5572, 5573, 5574, 5575, 5576, 5577, 5578, 5579, 5580, 5581, 5582, 5583, 5584, 5585, 5586, 5587, 5588, 5589, 5590, 5591, 5592, 5593, 5594, 5595, 5596, 5597, 5598, 5599, 5600, 5601, 5602, 5603, 5604, 5605, 5606, 5607, 5608, 5609, 5610, 5611, 5612, 5613, 5614, 5615, 5616, 5617, 5618, 5619, 5620, 5621, 5622, 5623, 5624, 5625, 5626, 5627, 5628, 5629, 5630, 5631, 5632, 5633, 5634, 5635, 5636, 5637, 5638, 5639, 5640, 5641, 5642, 5643, 5644, 5645, 5646, 5647, 5648, 5649, 5650, 5651, 5652, 5653, 5654, 5655, 5656, 5657, 5658, 5659, 5660, 5661, 5662, 5663, 5664, 5665, 5666, 5667, 5668, 5669, 5670, 5671, 5672, 5673, 5674, 5675, 5676, 5677, 5678, 5679, 5680, 5681, 5682, 5683, 5684, 5685, 5686, 5687, 5688, 5689, 5690, 5691, 5692, 5693, 5694, 5695, 5696, 5697, 5698, 5699, 5700, 5701, 5702, 5703, 5704, 5705, 5706, 5707, 5708, 5709, 5710, 5711, 5712, 5713, 5714, 5715, 5716, 5717, 5718, 5719, 5720, 5721, 5722, 5723, 5724, 5725, 5726, 5727, 5728, 5729, 5730, 5731, 5732, 5733, 5734, 5735, 5736, 5737, 5738, 5739, 5740, 5741, 5742, 5743, 5744, 5745, 5746, 5747, 5748, 5749, 5750, 5751, 5752, 5753, 5754, 5755, 5756, 5757, 5758, 5759, 5760, 5761, 5762, 5763, 5764, 5765, 5766, 5767, 5768, 5769, 5770, 5771, 5772, 5773, 5774, 5775, 5776, 5777, 5778, 5779, 5780, 57

104 The block diagram ordered for the stabilization of λ is the $\Gamma_{\lambda, \lambda, \lambda}$.



The particle beam, i. e., the controlled object, (1), is excited by a radio field betatron oscillations $x(\theta)$ with frequency $\Omega = \Omega_0 \pm 0.2\pi + \Delta\Omega$, Ω_0 is an integral number and $\Delta\Omega = \delta\Omega + \delta\Omega_k$, the perturbation plus the correcting signal. (2) is a signal electrode mixer, (3) is supplied with voltage from (3), (4) is an l-f filter, (5) - mixer with filter, acting as voltage divider. (7) is a frequency detector and (8) the executive component. The parameters of self-corrected proton accelerators with 300 and 1000 Bev were calculated for small and large radii of curvature. There are 2 figures, 1 table, and 6 references: 2 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: E. Courant

33231
S-083/62 112
B102 8135

Application of the principle...

et al. Phys. Rev. 98, 1100, 1952; K. Jonsson, Z. Schmelzer, J. Appl. Phys. v. 1, 1956, p. 395; A. Schoch, Theory of linear and non-linear perturbation of betatron oscillations in alternating gradient synchrotrons, CERN, Geneva, 1958; M. Barton, Rev. Sci. Instrum. 31, 1240 (1960).

SUBMITTED December 6, 1961

Card 4/4

L 3774-66 ENT(m) DIAAP GS

ACCESSION NR: AT5007949

S/0000/64/000/000/0788/0790 29

AUTHOR: Vagin, V. A.; Veksler, V. I.; Zubarev, V. N.; Kuznetsov, A. B.; Mukhin, S. V.; Petukhov, V. A.; Popov, V. A.; Rubin, N. B.; Stepanyuk, V. L.; Chekhlov, K. V.; Semenyushkin, I. N.

TITLE: Electrodynamic separator of antiprotons with 5 GeV/c momentum

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 788-790

TOPIC TAGS: high energy particle, antiproton, pion, particle interaction

ABSTRACT: The study of processes initiated by such particles as high-energy K-mesons and antiprotons is often determined by the possibility of separating these particles from an accompanying pi-meson background. The tremendous technical difficulties arising in the use of the electrostatic method of separation for obtaining pure beams of relativistic particles urgently dictate the necessity of seeking new means of separating particles. In 1956, V. I. Veksler and V. A. Petukhov proposed an electrodynamic method of separating particles according to masses. At the present time the high-energy laboratory of the Joint Institute of Nuclear Research is perfecting the application of an electrodynamic separator, creat-

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ACCESSION NR: AT5007949

ed on the basis of this method, of antiprotons with momentum up to 5 GeV/c. The present report discusses the principle governing the operation of the electrodynamic separator. At the end of the acceleration cycle in the synchrophasotron the protons are recaptured into the acceleration regime at a frequency of high multiplicity and are subsequently directed against a target. The beam of secondary particles which then occurs possesses a corresponding high-frequency structure. The negatively charged particles that interest us are extracted by the magnetic field of the accelerator to the outside. Further, as a result of magnetic analysis the particles are resolved in a narrow interval of momenta, or pulses. A longitudinal distribution of the resolved particles begins to take place over a certain distance of their flight. The antiprotons being heavier particles retire from the pi-mesons. If the total length L of flight, counted from the target (for the case of relativistic particles) is equal to

$$L = \frac{\lambda}{2(\beta_1 - \beta_2)}$$

where λ is the operating wavelength of a multiple-acceleration system and β_1, β_2 are respectively the velocities of the pi-mesons and antiprotons in units of the speed of light, then the lag of the antiprotons is exactly equal to the half wavelength $\lambda/2$. On the path of the particles at this place there is created a high-frequency transverse electric field with the same wavelength λ which is rigidly bound in

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ACCESSION NR: AT5007949

phase with the voltage that is accelerating the beam at multiple frequency. In case of a suitable choice of the phase of the electric field the antiprotons and the pi-mesons will obtain angular deflections different in sign and can be spatially resolved further. The report discusses the composition of the electrodynamic separator of antiprotons at the high-energy laboratory, which consists of a multiple-acceleration system, deflecting device, and an ion-optical system. Also discussed are the separator's characteristics. The device can also be employed to resolve pi-mesons and antiprotons with smaller values of momenta and to separate K-mesons, if certain necessary conditions are fulfilled for the separation of antiprotons and K-mesons respectively:

$$(pc)_p \sim m_p c^2 \left[\frac{L}{(2n+1)\lambda} \right]^{1/2};$$

$$(pc)_k \sim m_p c^2 \left[\frac{L}{(2n+3)\lambda} \right]^{1/2}.$$

where the momenta of the antiprotons and K-mesons are respectively $(pc)_p$, $(pc)_k$, and the rest-energy of an antiproton is $m_p c^2$, and $n = 0, 1, 2, \dots$. Orig. art. has 3 figures.

Card 3/4

L 3774-66

ACCESSION NR: AT5007949

ASSOCIATION: Ob"yedinennyi institut yadernykh issledovaniy, Dubna (Joint Institute of Nuclear Research)

SUBMITTED: 26 May 64

ENCL: 00

SUB CODE: NP

NO REF SOV: 003

OTHER: 000

gc

Card 4/4

I 46161-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pab-10/Pt-7 IJP(o) GS

ACCESSION NR: AT5007927

S/0000/64/000/000/0392/0395

AUTHOR: Metal'nikov, Yu. N.; Petukhov, V. A.

TITLE: Problem of particle injection into an electron-positron storer

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 392-395

TOPIC TAGS: high energy accelerator, charged particle beam, particle physics

ABSTRACT: The creation of a storage system requires the solution of complex problems, among which an important role is played by injection of particles and their capture into the accumulator state. To this problem there have been devoted a considerable number of theoretical and experimental works. The present report turns attention to one possibility for the realization of particle injection into an electron-positron accumulator by use of a synchrotron as an injector. In this case the targets serving as sources of positrons and electrons can be placed within the chamber of the storage system (in the margin of the operating region), and they can be exposed to the gamma-beam of the synchrotron. The capture of the particles flying out from a target into the accumulator state can be effected with the aid of inflector magnets arrayed in the linear sections of the storage ring and acting upon the betatron oscillations of the particles, by decreasing their amplitude.

Card 1/3

L 46161-65

ACCESSION NR: AT5007927

The described method of injection is not unique, since the conversion of gamma-quanta into e^+e^- electron-positron pairs can be effected also in a target situated outside the storage system, with the particle beams thus formed subsequently introduced into the accumulator ring. It is also possible to employ electrons derived from a synchrotron, which are subsequently transformed into positrons. The first considered method, however, proves to be the simplest, inasmuch as there is no need to bring the particles out from the accelerator, or to bring them into a storage device and focusing and deflecting systems located in an output and input track. Moreover, the storage device in the given alternative for injection can easily be made mobile relative to the injector, which permits one to carry out setting-up operations and repair and adjustment of the accumulator, without disruption of its normal operation. The placement of the targets within the storage chamber causes an increase in the size of the magnet clearance in the storage system, which is necessary for the capture of the particles which fly out from the target in a sufficiently large angular range. This fact leads to some peculiarities in the operation of the inflectors. The report describes a procedure for the calculation of the activity of the inflector magnets, considered in the case of the storage ring. The number of positrons (or electrons) captured into the storage state per cycle of operation of the synchrotron is calculated to be $Q = 10^6$ particles/cycle, which is sufficient for the storage of the needed density of particles in the storage ring.

Cont. 2/3

45161-65

ACCESSION NR: AT5007927

in the case of completely reasonable values of lifetime. Orig. art. has 3 figures,
2 tables.

ASSOCIATION: Fizicheskiy institut imeni P. N. Lebedev AN SSSR (Physics Institute
AN SSSR)

SUBMITTED: 26May64

ENCL: 00

SUB CODE: NP

NO REF SOV: 000

OTHER: 000



Cord 3/3

SHORYGIN, P.P.; PETUKHOV, V.A.; STOLYAROVA, L.G.

Mutual influence of atomic groups in the molecules
containing heavy atoms and π -bond systems. Dokl. AN
SSSR 154 no.2:441-444 Jan'64. (MIRA 17:2)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN
SSSR. Predstavleno akademikom A.A. Balandinyam.

L 3631-26 EWP(1), EWP(2) RM
ACC NR: A16008508 SOURCE CODE: AR/0001/06/1001/0056-0155

AUTHOR: Petukhov, V. A., Mironov, V. G., Gerasimov, B. G., et al.

ORG: Institute of Organic Chemistry, N. P. Zemskaya, Leningrad, USSR (Institut organicheskoy khimii, N. P. Zemskaya, Leningrad, USSR)

TITLE: Vacuum ultraviolet absorption spectra of α -alkenyl compounds of elements of group IV

SOURCE: AN SSSR. Izvestiya, Akademiya Nauk SSSR, Seriya Khim. Nauk, 1986, No. 1, p. 156-157, 156 figs.

TOPIC TAGS: UV spectrum, UV absorption, absorption spectrum, vacuum ultraviolet

ABSTRACT: The authors examine the ultraviolet spectra of α -alkenyl compounds of the type $\text{CH}_2=\text{CH}-\text{MR}_3$, M being an element of group IV and R being a methyl, ethyl, propyl, or halogen, the MR_3 group being situated in the immediate vicinity of the double bond. The investigation is performed to check the assumptions that the inductive effect of this group should be more pronounced than in α -alkenyl compounds and therefore the indications of lowering of the vacuum ultraviolet absorption of M with the π -electrons of the multiple bond should increase. At the same time the authors acknowledge the possibility of weakening of the inductive effect of the electrons of the multiple bond with the valence electrons of the MR_3 group, in virtue of the M atom being situated in the nodal plane of the wave function of the

Cord 1/2

UDC: 543.422

L 36990-66

ACC NR: AP6008508

π -electrons of the multiple bonds. These characteristics of the compounds determine the complex dependence of their spectra on the MR_3 substitute. The investigation revealed that substitutes MR_3 and $\text{R}_3\text{M}-\text{C} \equiv \text{C}-\text{MR}_3$ compounds cause a bathochromic effect in the infrared absorption spectra. The effect of the substitutes does not agree with the linkage mechanism and for its explanation it is necessary to take into account primarily the $\sigma - \pi$ -linkage and to a lesser degree the inductive effect. The art. has: 2 figures.

SUB CODE: 07/ SUBM DATE: 12May65/ ORG REF: 001/ CTR REF: 100

Card 2/2 *LN*

L 33262-66 EWT(m)/T RM/WW/JW/JWD

ACC NR: AR6016188

SOURCE CODE: UR/0058/65/000/011/D021/D021

AUTHOR: Nikitina, A. N.; Petukhov, V. A.; Galkin, A. F.; Fedotov, N. S.; Bubnov, Yu.

R.

TITLE: Absorption spectra of boro-organic compounds in the vacuum-ultraviolet region

SOURCE: Ref. zh. Fizika, Abs. 11D156

REF SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 3, vyp. 1, 1964, 369-383

TOPIC TAGS: uv spectrum, absorption spectrum, boron compound, electron spectrum, line intensity, Raman spectrum

ABSTRACT: The authors investigated the electronic absorption spectra of solutions of boro-organic compounds of aromatic and non-aromatic series, and also substituted borazols in the region $\sim 1700 - 3000 \text{ \AA}$. The integral intensities of the lines (of the benzene ring) were measured in the Raman spectra of certain boro-organic compounds of the aromatic series. The strong interaction between the boron atom and the aromatic radicals was observed, which was especially strongly manifest in short-wave electron transitions. With increasing interaction the intensity of the corresponding bands decreases. The changes of the spectra observed in the borazols are analogous to the changes of the spectra of the corresponding benzene substitutes. [Translation of abstract]

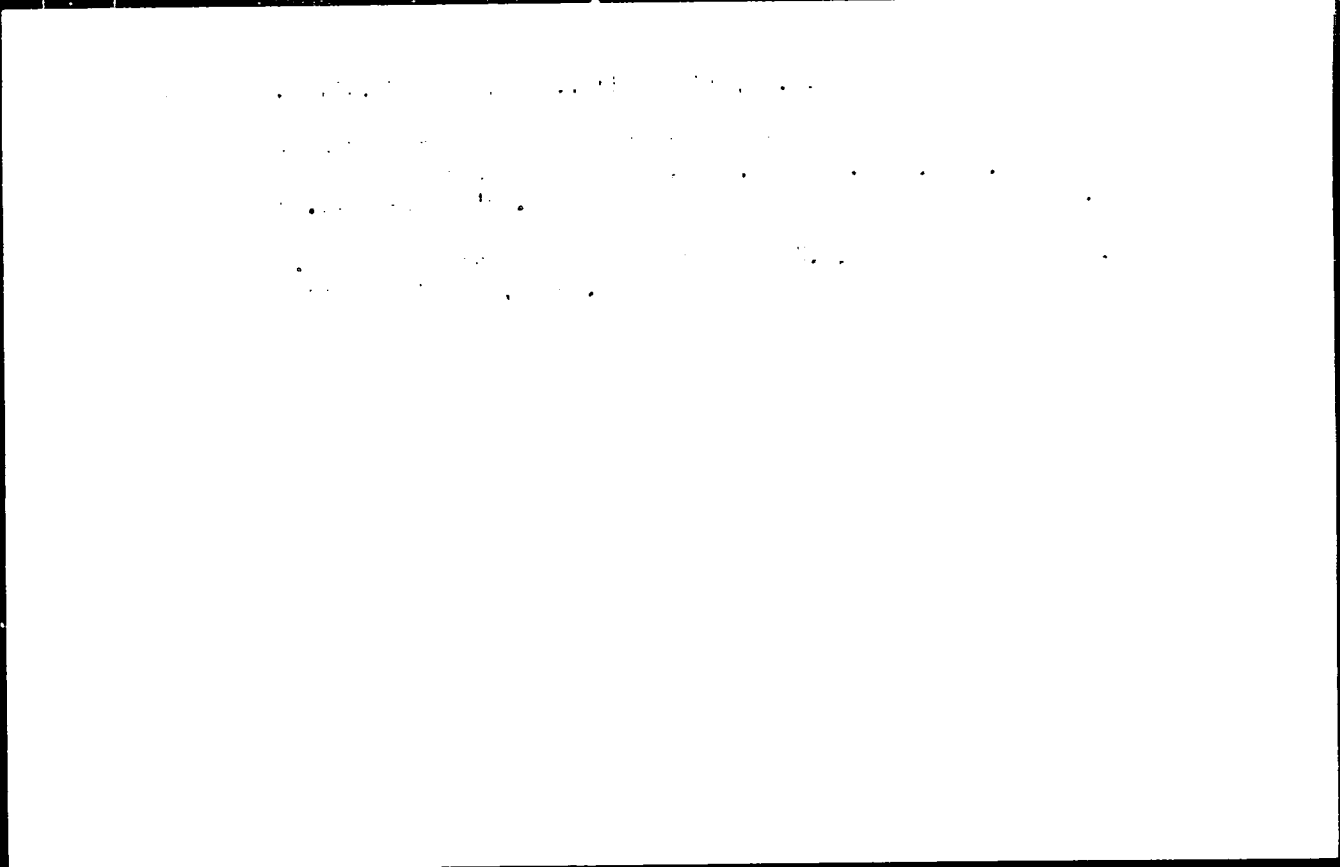
SUB CODE: 20, 07/

Card

1/1

"APPROVED FOR RELEASE: 06/15/2000

CIA-RDP86-00513R001240710007-9



APPROVED FOR RELEASE: 06/15/2000

CIA-RDP86-00513R001240710007-9"

KOMAR, A.A.; LEYKIN, Ye.M.; METAL'NIKOV, Yu.N., MOROZ, Ye.M., PETUKHOV, V.A.

Physical foundations of experiments on opposing electron-positron
beams. Trudy Fiz. inst. 22:222-295 '64. (MIRA 17:9)

ANTIK, L.V.; KLABUNOVSKIY, Ye.I.; BALANDIN, A.A.; LOPATIN, B.V.; PETUKHOV, V.A.

Synthesis and transformations of 1-hydrodioxotriphenylene.
Izv. AN SSSR Ser. khim. no.7:1260-1267 J1 '64.

(MIRA 17:4)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.

SHORYGIN, P.P.; ROSHCHUPKIN, V.P.; PETUKHOV, V.A.; YEGOROVA, Z.S.

Effect of substituents on the properties of molecules containing
a conjugated π -bond system. Zhur. fiz. khim. 35 no.2:258-268
F '61. (MIRA 16:7)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova i Institut
organicheskoy khimii AN SSSR.
(Chemical bonds) (Substitution (Chemistry))

LYSTSOV, V.N.; SUKHORUKOV, B.I.; BLYUMENFEL'D, L.A.; MOSHKOVSKIY, Yu.Sh.;
PETUKHOV, V.A.

Spectroscopic study of deoxyribonucleic acid in the absorption
band of 200 millimicrons. Biofizika 7 no.6:662-663 '62.
(MIRA 17)

1. Institut khimicheskoy fiziki AN SSSR, Moskva.

PETUKHOV V. A.

5

S/908/62/000/000/007/008
B163/B180

AUTHORS: Babkin, V. M., Bozin, G. M., Gagin, Ye. N., Yeregin, L. V.,
Metal'nikov, Yu. N., Orlovskiy, G. N., Petukhov, V. A.,
Pisarev, V. Ye., Sedov, N. G., Shorin, K. N.

TITLE: Some starting-up and operating problems of the 680 Mev
synchrotron

SOURCE: Uskoritel' elektronov na 680 Mev; sbornik statey. Ed. by
Z. D. Andreyenko. Moscow, Gosatomizdat, 1962. 64-74

TEXT: The momentary particle orbit during the first revolutions is distorted due to a number of uncontrollable deviations from the ideal magnetic field configuration. This must be corrected in order to capture a sufficient part of the injected electrons. Indicating devices measuring deviations help to find the initial conditions, e.g., the correct injection angle and timing for which the free oscillations about the equilibrium orbit become minimal during the first revolutions. Similar methods were used to correct for deviations of the median surface of the magnetic field from the geometrical symmetry plane. For these measurements

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Some starting-up and operating ...

9/908/62/000/000/007/008
B163/B180

a chopper was used, consisting of an electric deflector immediately behind the 60° magnetic sector field in the injection line, by which short pulses of 1-2 μsec duration could be selected from the injected beam. The signalling devices were flags and grids coated with luminescent paint, sometimes in connection with photomultipliers. In this way the orbit deviations could be reduced to 2-3 cm in radial in 1-2 cm in vertical direction. In the quasibetatron and the synchrotron acceleration stages the envelope of all oscillating orbits was measured by movable vanes, three or four in each sector. In the first stage, about 15 μsec , the accelerating field is disconnected but the magnetic field is growing. When the momentary particle orbit has been reduced, at 0.2 to 0.3 mm per revolution, from the inflector to the central chamber radius, the accelerating electric field is switched on. Under optimal conditions, the capture coefficient is 2%, which corresponds to $2.5 \cdot 10^9$ electrons per cycle. To avoid undesirable resonance effects from the passing electron beam in the resonator during the first stage the resonator is detuned, and the second stage is performed at a smaller orbit radius. When the field is switched off at the end of the accelerating cycle, the magnetic field is still rising and the electrons hit the target, a tungsten wire 1 mm

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Some starting-up and operating ...

S/908/62/000/000/007/008
B163/B180

diam, inside the acceleration orbit. The intensity of the γ radiation produced was measured in a thick-walled graphite ionization chamber. A total γ energy per cycle of $2 \cdot 10^9$ Mev could be achieved, and the number of accelerated electrons per cycle was of the order of 10^8 . There are 6 figures.

Card 3/3

KOTOV, V. I.; PETUKHOV, V. A. [Pietukhev, V. A.]

Accelerator physics. Des. such. fiz. no.6:174-183 '62.
(MIRA 16:1)

(Particle accelerators)

GRYAZNOV, A.I.; METAL'NIKOV, Yu.N.; MOLCHANOV, S.S.; NOVIKOVA, G.V.;
PETUKHOV, V.A. PISAREV, V.Ye.; PYSHKIN, B.N.; PANTYUSHKOVA, Ye.V.;
SEDOV, M.G.; SHCHIN, K.N.; YAKIMENKO, M.N.

The 680 Mev. synchrotron of the Physical Institute of the Academy
of Sciences of the U.S.S.R. Atom. energ. 13 no.3:228-234 S '62.
(MIRA 15:9)

(Synchrotron)

ZHURAVLEV, A.A.; IVANOV, I.N.; KARMASIN, M.; KOTOV, V.I.; MYAE, E.A.;
OBOZNYI, V.A.; OBUKHOV, Yu.L.; PETUKHOV, V.A.

Study of particle motion in a circular synchrocyclotron. Zhur.
tekh.fiz. 32 no.8:905-913 Ag '62. (MIRA 15:8)
(Synchrotron)

BOYTSOV, Ye.N.; FINKEL'SHTEYN, A.I.; PETUKHOV, V.A.

Dependence of vacuum ultraviolet spectra of s-triazine
derivatives on their molecular structure. Opt. i spektr. 13
no.2:274-276 Ag '62. (MIRA 15:11)
(Triazine--Spectra)

NIKITINA, A.N.; PETUKHOV, V.A.; GALKIN, A.F.; FEFOTOV, N.S.; BUBNOV,
Yu.N.; ARONOVICH, P.M.

Absorption spectra of organoboron compounds in the vacuum
ultraviolet region. Opt. i spektr. 16 no.6:976-983 Je '64.
(MIRA 17:9)

PETUKHOV, Valentin Afanas'yevich, Laureat Leninskoy premii;
~~KOTOV, Vladimir Ivanovich~~

[Modern particle accelerators] Sovremennye uskoriteli
chastits. Moskva, Nauka, 1965. 37 p. (MIRA 18:8)

AZARKOVICH, A.Ye., inzh.; PETUKHOV, V.F., inzh.

Use of boring and blasting in building to loosen frozen ground.
Vzryv. delo no.51/8:404-411 '63. (MIRA 16:6)

1. Proizvodstvenno-eksperimental'noye upravleniye Vsesoyuznogo gosudarstvennogo tresta po provedeniyu burovzryvnykh rabot.
(Frozen ground) (Boring) (Blasting)
(Building—Cold weather conditions)

L 5281-66 EWT(m)/EWP(w)/EWP(v)/T-2/EWP(k)/ETC(m) WW/EM

.AOC NR: AP5022031

SOURCE CODE: UR/0286/65/000/014/0100/0100

AUTHOR: Petukhov, V. G.

ORG: none

TITLE: Working blade with dual liquid cooling. Class 46, No. 173072 [announced by the Central Boiler and Turbine Institute im. I. I. Polzunov (Tsentral'nyy kotloturbinnyy institut)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 100

TOPIC TAGS: turbine blade, gas turbine, blade cooling, ⁹⁶heat exchanger

ABSTRACT: This Author Certificate presents a working blade with a dual liquid cooling (see Fig. 1). The blade is intended for a turbine engine such as a gas turbine. To produce a high rate of cooling and to make the blade interchangeable, the blade is made as a separate unit with individual provisions for liquid supply and removal. A heat exchanger mounted above the blade stem is made of curved cover plates attached to the body of the blade.

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L 5281-66

ACCESSION NR: AP5022031

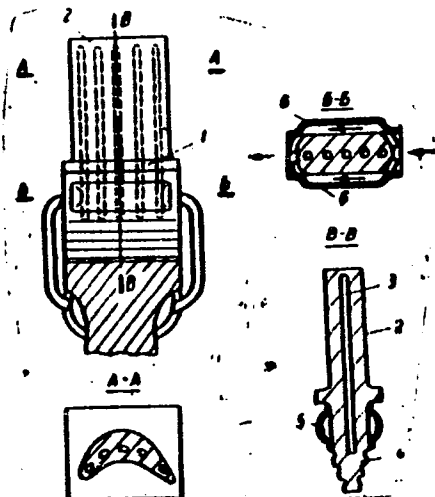


Fig. 1. 1- blade; 2- fin; 3- duct; 4- stem; 5- heat exchanger;
6- cover plates

Orig. art. has: 1 figure.

SUB CODE: FR/ SUBM DATE: 16Aug63/ ORIG. REF: 000/ OTH REF: 000

Card 2/2

FIKHMEN, B.A.; PETUKHOV, V.O.

Photometric analysis of bacterial suspensions. Report No. 3.
Study of some thermodynamic processes in bacteria. "Dokl.
mikrobiol., epid. i immun. biol." 1983, No. 185. (MIRA 1983)

1. Gosudarstvennyy kontrol'nyy inst. 12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1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ACC NR: AP6014398 (N) SOURCE CODE: UR/0096/66/000/001/0048/0051

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TITLE: Calculation of a cooled vane with a continuous computer

SOURCE: Teploenergetika, no. 1, 1966, 48-51

TOPIC TAGS: turbine design, turbine blade, computer simulation

ABSTRACT: The article concerns a method of calculating the local values of the temperature of the walls of a nozzle type vane cooled by a transverse current of air, using a continuous computer. To set up the heat balance equation there is considered one element of the cooling channel with a length of dx , a height l and a width S . Neglecting thermal resistance, the heat balance equation can then be written in the form

$$\frac{dt_w}{dx} = \frac{\alpha_w \cdot (t_g - t_w)}{3600 \cdot c_w} \quad (1)$$

where t_g is the local value of the air temperature over the channel, $^{\circ}C$;

UDC: 621.165.542.46.001.24

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ACC NR: AP6014398

l is the height of the vane, in meters; α is the local value of the heat transfer coefficient from the gas to the wall, kcal/m²-hours-°C; α_B is the local value of the heat transfer coefficient from the wall to the air, kcal/m²-hour-°C; G_B is the air flow rate through half of the vane, kg/sec; c_{pb} is the heat capacity of the air, kcal/kg-°C. Calculated results show that the temperature difference over the profile of the vane, with a constant gap for the cooling air, a gas pressure of 9 kgf/cm², and a gas temperature of 1200°C, reaches 300°. With a change in the air flow rate, the temperature difference in the vane does not change. A change in the temperature of the cooling air at the inlet to the vane (from 50 to 150°C) and a constant air flow rate and fixed gaps has only a slight effect on the temperature field in the vane. Orig. art. has: 8 formulas and 6 figures.

SUB CODE: 10,09/ SUBM DATE: none/ ORIG REF: 007

Card 2/2

PETUKHOV, V.G.

Possibilities for the application of the Mie theory
to light scattering of the suspensions of spherical
bacteria. Biofizika 10 no. 6:993-999 '65.

(MIRA 19:1)

1. Gosudarstvennyy kontrol'nyy institut meditsinskikh
biologicheskikh preparatov, Moskva. Submitted September 24,
1964.

L 22676-66 EWT(d)/EWT(1)/EPF(d)-2 IJP(c) WW
ACC NR: AP6006137 SOURCE CODE: UR/0114/65/000/010/0019/0021

AUTHORS: Osharov, S. Ya. (Candidate of technical sciences); Petukhov, V. G.
(Engineer); Sukhova, N. V. (Engineer) B

ORG: none

TITLE: Computing the temperature of the rim of a cooling blade with consideration of a variable value of the coefficient of thermal conductivity

SOURCE: Energomashinostroyeniye, no. 10, 1965, 19-21

TOPIC TAGS: heat transfer, thermal conductivity, metal forming, cooling, cooling rate

ABSTRACT: An approximate method of calculating temperature and its gradients at the rims of cooling blades is presented. The method takes into account the variation of the coefficient of thermal conductivity of the material with temperature and the variation of heat transfer coefficients between the rim and the cooling gas. In cross section, the rim is represented as a series of rectangular sections with metal contacts between them (see Fig. 1). The change in heat quantity between x and $x + dx$ is expressed as

$$\left[\frac{\partial}{\partial x} \left(\lambda F_x \frac{\partial t}{\partial x} \right) dx, \right]$$

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UDC: 621.438:536.24.001.24 2

L 22676-66

ACC NR: AP6006137

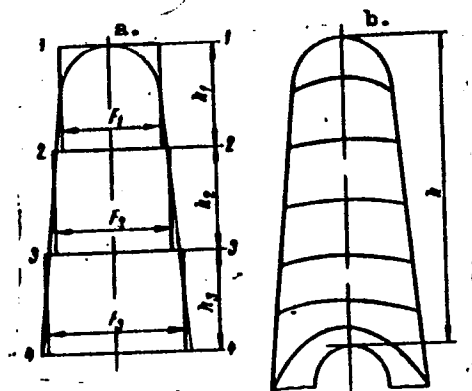


Fig. 1. Blade edge

where x is the distance from the base of a rectangle, P_x is the rim section at x , λ is the coefficient of thermal conductivity of the material of a given rectangle, and t is the flow temperature. Heat transfer with the ambient gas is related to this heat quantity according to the equality

where α is the heat transfer coefficient from the gas to the wall, dS is an element of the wall surface, and t_2 is the gas temperature. The problem in

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ACG NR: AP6006137

one-dimensional form may be reduced to the equation

$$t_0 - t = C_1 e^{2x} + C_2 e^{-2x},$$

where $t_0 = t_0$. Boundary conditions are developed in accordance with the trapezoidal configuration of the cooling device. The system is solved and the variation of temperature is plotted against variation of heat transfer coefficient and other variables. Orig. art. has: 2 figures and 6 equations.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 004

Card 3/3 *HW*

1 20420-66 EWP(w)/EWP(f)/EPE(n)-2/EWP(v)/T-2/EWP(t)/EWP(n)/EWP(k)/ETC(m)-6
 ACN NR. AP6009830 (N) SOURCE CODE: UR/0413/66/0007004/0022/0022
 JD/WW/HW/EM
 INVENTOR: Osherov, S. Ya.; Petukhov, V. G.; Ventsyulis, L. S.
 ORG: Central Scientific Research Design and Planning Boiler and
 Turbine Institute im. I. I. Polzunov (Tsentral'nyy nauchno-issledo-
 vatel'skiy i proektno-konstruktorskiy kotloturbinnyy institut)
 TITLE: Turbomachine nozzle blade. Class 14, No. 178827
 SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4,
 1966, 22
 TOPIC TAGS: turbine blade, turbine nozzle blade, gas turbine
 ABSTRACT: The proposed nozzle blade, e.g., for gas turbines, has internal
 longitudinal channels for the cooling medium which is fed to a col-
 lector located outside the turbine machine (see Fig. 1). To obtain
 Card 1/2 UDC: 621-226.3-712/713

L 20420-66

ACC NR: AP6009830

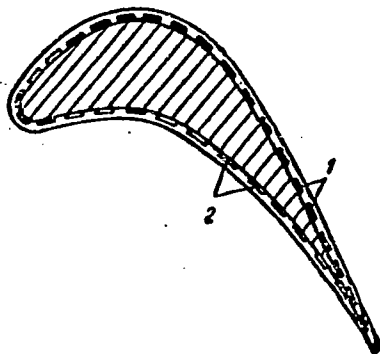


Fig. 1 Nozzle blade

1 - Coolant feed channel; 2 - coolant drain channel.

a uniform temperature field along the blade profile, the channels for feeding and draining the coolant are arranged in sections. Each of these sections has about the same heat transfer coefficient. Orig. art. has: 1 figure. [TN]

SUB CODE: 21/ SUBM DATE: 19May64/ ATD PRESS: 4222

Turbine blade technology

Cord 2/2 ULR 19

OVDIYENKO, Ivan Kharitonovich; ZAYCHIKOV, V.T., doktor geograficheskikh nauk, otvetstvennyy redaktor; LAVRENT'YEVA, Ye.V., redaktor, PETUKHOV, V.G., khudozhestvennyy redaktor, GLEYKH, D.A., tekhnicheskiiy redaktor; MAL'CHEVSKIY, G.N., redaktor kart.

[Inner Mongolia] Vnutrenniiaia Mongoliiia. Moskva, Gos. izd-vo geograficheskoi lit-ry, 1954. 166 p. (MIRA 8:1)
(Mongolia--Geography)

TARASOV, Georgiy Lvovich; SAGHEN, K.I., L. Nakhimovskaya
Kand. Tekhn. Nauk, Priborostroyeniye; PLEKHIN, V.V., Ing.
Metr., Opt. Mekhanika; POLISHINA, T.A., Med.

(Eastern Siberia, Yakutia, Sakhalin, Kamchatka, Kuril Islands, Japan, Korea, Manchuria, Mongolia, etc.).

[illegible]

STYRIKOVICH, M. S., akademik. PETUKHOV, V. I., kand. tekhn. nauk. KOLOKOILEV, V. I., kand. tekhn. nauk.

Effect of the density of the gas phase on the magnitude of drop entrainment. Teploenergetika 11 1964 N 164. (MIRA 11 1964)

1. Energeticheskiy institut imeni G. M. Krzhizhanovskogo.

ACC NR: AP0008779

AUTHOR: Petukhov, V. I. Proshin, Ye. M.

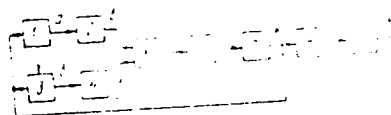
ORG: Ryazan' Radiotechnical Institute (Ryazanskii radiotekhnicheskii institut)

TITLE: Radiotelemetric system for deformations in moving parts

SOURCE: Izmeritel'naya tekhnika, No. 11, 1976, 49-51.

TOPIC TAGS: strain gage

ABSTRACT: The development of a new RTSA telemeter is described. It is intended for measurement of strain in various moving parts of machines. A transistorized transmitter of a 10^3 Hz carrier is mounted on a moving part (see figure) strain-measuring bridge is supplied by pulses from a generator.



Card 1/2

L 37950-50

ACC NR: AP6 677

developed from general principles and has been described in the
generator 5. In the initial state of the generator, the generator
operates and sends its output to the output of the generator
and low-sensitivity receiver. The output of the generator
An electromagnetic output graph is shown as a series of
claimed to be more reliable than the output of the generator
(less oscillograph). The output of the generator is
system. Orig. art. has 4 figures and 1 table.

SUB CODE: 09 / SUBM DATE: 09/09/2019

Card 2/2 4 5

PETUKHOV, V.I., inzh.

Frequency control of a turbine-generator unit. Elek.sta. 29 no.3:7-8
(MIRA 11:5)

Mr '58.

(Hydraulic turbines) (Governors (Machinery)

1. TILBOV, V.I., 2

AGENCY

SECRET

PETUKHOV, V. I.
BLOSHENKO, M.G., polkovnik; GAVRIKOV, P.K., polkovnik; KIRIN, I.D., polkovnik; SHVIDCHENKO, K.Ye., polkovnik; LOSHCHILOV, A.K., podpolkovnik; KUBASOV, A.P., general-leutenant, red.; PETUKHOV, V.I., general-mayor, red.; REVENKO, P.M., general-mayor, red.; VIL'CHINSKIY, I.K., polkovnik, red.; MEDNIKOVA, A.N., tekhn.red.

[Training manual for young soldiers; second edition] Posobie po obucheniiu molodykh soldat. Izd.2, ispr. i dop. Moskva, Voen. izd-vo M-va obor.SSSR, 1959. 503 p. (MIRA 13:3)
(Military education)

BARTOLOMEY, G.G.; VINOKUR, Ya.G.; KOLOKOL'TSEV, V.A.; PETUKHOV, V.I.

Experimental investigation of steam and gas content in bubble
processes. Teploenergetika [Energ. inst.] no.1:40-45 '59.
(MIRA 13:2)

(Hydrodynamics) (Bubbles)

ALMAZOV, Ilya Pavlovich, born 1914, Moscow, U.S.S.R.

Ph.D. thesis, 1941, Moscow State University, Faculty of Science, Department of Physics, 1941, Moscow.

1. Iz kaitiny Chasov...
nauki prof. Ilya Pavlovich, nauchnik Chasov...
Istinaeva i stam...
Shcherban...
lika I.P. 1941.

KNIEDEL, V.A., 1924-; FAYGENBAUM, S.D., 1924-; FAYGENBAUM, S.D., 1924-.

The ALA-30 automatic machine is a 30-caliber machine gun which
collects the shell of the TORN type battery. The machine is
20 S. 165.

.. Vvedeniyu iav. and is the only one of its kind in the
observatory.